

REMARKS

Enclosed is a Power of Attorney in favor of the undersigned. The Examiner's cooperation is sought to ensure that future correspondence is directed to:

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Independent claims 15 and 26 and their dependent claims 16-25 and 27-34 replaced canceled claims 1-14 and were drafted to avoid the indefiniteness objections raised by the Examiner.

Independent claims 15 and 26 make it clearer that applicants' imagers 3, 4 and 26 are "two-dimensional" imagers, for example, a CCD array. By contrast, each of the detectors 28, 29 of U.S. Patent No. 5,936,218 to Ohkawa and the detectors 4A, 4B of U.S. Patent No. 5,801,370 to Katoh is a conventional photodiode which can only image a single spot of light incident thereon. It is only by movement of the rotary polygons 12 (Katoh) and 25 (Ohkawa) that light can be collected over a linear path but, of course, never over a two-dimensional area.

Independent claims 15 and 26 both recite that a pair of two-dimensional images are captured of the same entire bar code symbol from two different directions. As the Examiner acknowledged, Ohkawa fails to capture even one entire two-dimensional image. Ohkawa's reader generates a plurality of scanning lines over a symbol. For example,

Ohkawa's first mirror system 26 generates a first scan line over one portion of the symbol, while the second mirror system 27 generates a second scan line over another portion of the symbol. Each scan line covers a different area on the symbol. Neither of Ohkawa's scan lines can image the entire symbol.

The Examiner suggested that one skilled in the art could modify Ohkawa's reader by turning to U.S. Patent No. 6,330,975 to Bunte. It is true that Bunte discloses a CCD detector 602 in Fig. 6A. However, this CCD detector only captures a single image. When Bunte's terminal 400 is held upright, the detector 602 takes a photo image through vertical window 604. When Bunte's terminal is held horizontally, then the detector takes the image through the horizontal window 414. There is no suggestion that Bunte's terminal can take a pair of images at the same time through both windows 604, 414. Replacing Ohkawa's photodiodes 28, 29 with Bunte's CCD array would render Ohkawa's reader inoperable.

Allowance of all claims is respectfully requested.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.

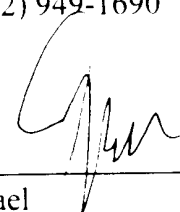
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NEW CLAIMS

15. A reader for electro-optically reading a bar code symbol on a target, comprising:

- a) a first light-transmissive window and a second light-transmissive window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is situated during reading;
- b) a first imaging system including first capture optics for optically capturing light from the symbol passing in a first direction through the first window, and a first two-dimensional imager having a first field of view and operative for imaging a first two-dimensional image of the entire symbol from the light captured by the first capture optics; and
- c) a second imaging system including second capture optics for optically capturing light from the symbol passing in a second direction through the second window, and a second two-dimensional imager having a second field of view overlapping the first field of view and operative for imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics;
- d) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other.

16. The reader of claim 15, wherein the windows are mounted in a slot scanner.

17. The reader of claim 15, wherein the angle between the windows is a right angle.

18. The reader of claim 15, wherein each of the two-dimensional imagers is a charge coupled device (CCD) array extending along mutually orthogonal rows and columns.

19. The reader of claim 15, wherein each system includes an illuminator for illuminating the symbol through a respective window.

20. The reader of claim 15, wherein each system includes a display for displaying the respective two-dimensional images.

21. The reader of claim 15, and a decoder operatively connected to the first and the second imaging systems, for processing the respective two-dimensional images.

22. The reader of claim 21, wherein the decoder is operative for sequentially processing the first and the second images.

23. The reader of claim 21, wherein the decoder is operative for simultaneously processing the first and the second images.

24. The reader of claim 15, wherein each of the first and the second capture optics is a stationary fold mirror.

25. The reader of claim 15, wherein the symbol is a two-dimensional bar code symbol.

26. A reader for electro-optically reading a bar code symbol on a target, comprising:

- a) a first light-transmissive window and a second light-transmissive window disposed at an angle to each other and bounding a reading area in which the target bearing the symbol to be read is situated during reading;
- b) first capture optics for optically capturing light from the symbol passing in a first direction through the first window;
- c) second capture optics for optically capturing light from the symbol passing in a second direction through the second window;
- d) a common mirror movable between a first position and a second position; and
- e) a common two-dimensional imager for imaging a first two-dimensional image of the entire symbol from the light captured by the first capture optics and directed to the imager by the mirror in said first position, and for imaging a second two-dimensional image of the entire symbol from the light captured by the second capture optics and directed to the imager by the mirror in said second position;

f) wherein said first and second two-dimensional images are of the same entire symbol but captured by light passing in said first and second directions which are different and at an angle to each other.

27. The reader of claim 26, wherein the windows are mounted in a slot scanner.

28. The reader of claim 26, wherein the angle between the windows is a right angle.

29. The reader of claim 26, wherein the imager is a charge coupled device (CCD) array extending along mutually orthogonal rows and columns.

30. The reader of claim 26, the imager generates a frame having even image lines interlaced with odd image lines, and wherein the first two-dimensional image is contained within the even image lines, and wherein the second two-dimensional image is contained within the odd image lines.

31. The reader of claim 30, and a decoder for sequentially processing the first and the second images.

32. The reader of claim 30, and a decoder for simultaneously processing the first and the second images.

33. The reader of claim 26, wherein each of the first and the second capture optics is a stationary fold mirror.

34. The reader of claim 26, wherein the symbol is a two-dimensional bar code symbol.